School of Health Sciences Seminar

Thursday 25 February , 1-2pm, Queens Building 01.11

University of East Anglia

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"The Promise of Basic Motor Control in Rehabilitation"

Seminar Presentation

Motor control is a growing research field that addresses how humans adapt or readapt to a novel context. Since 2000, theoretical approaches have been applied successfully to describe experimental findings in a coherent framework, bringing up the possibilities to simulate and predict behavior in various contexts. Despite this extensive research and associated state-of-the art robotic methodologies, a surprisingly low number of concepts have been applied in clinical settings. There are still many research gaps that prevent inclusions of novel approaches into rehabilitation protocols. On the one hand, the effectiveness of rehabilitative interventions among neurological patients varies widely because the mechanisms underlying motor recovery are heterogeneous. On the other hand, we still lack a holistic understanding of the different learning mechanisms. Third, only few studies investigated the ability of neurological patients to relearn a motor task. Here, we review some important findings in motor learning in the context of reaching and object manipulation and describe how they could be applied in patients. Rehabilitation programs should include meaningful, repetitive, intensive, and task-specific movement training in an enriched environment to promote neural plasticity and motor recovery.

Brief Biography

Olivier White completed his master in Computing Civil Engineering at *Université catholique de Louvain* (UCL, Belgium, 2000). Then, he worked in the Rehabilitation Unit (medicine faculty, UCL) as a software and hardware engineer to create an experimental platform dedicated to measuring human motor adaptation in altered gravitational environments. His PhD, conducted at the Systems and Control lab (Louvain School of Engineering, Belgium), focused on the role of gravity in the control of dexterous manipulation. Between 2007 and 2009, he was a post doc fellow at Bangor University (UK) to investigate motor control in redundant systems (advisor: Dr. Jörn Diedrichsen).
Olivier White is PI and co-PI of several international networking and scientific projects (e.g. ESA-funded delta-g Topical Team). He worked during 18 months at the European Science Foundation (France) to support research actions, manage projects in the Space domain and coordinate international peer-review activities.

Olivier White is now an associate professor in Computational Neuroscience at *Université de Bourgogne* and INSERM (Dijon, France). His main research interests are devoted to motor control using space environments, haptics and 3d virtual reality to probe learning and adaptation in humans with a new special emphasis on applications.

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